PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Gopalan, Krishnamachari et al.	Atty. Docket:	85939.000018
Serial No.:	09/338,094	Examiner:	C. Paulraj
Filed:	June 23, 1999	Art Unit:	1773

Title: WEATHERSEAL HAVING A CONTACT LAYER WITH THERMOPLASTIC PARTICLES IN A THERMOSET CARRIER

PRELIMINARY AMENDMENT

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to substantive examination of the present application, please amend the application as follows

In the Specification

On page 1, prior to line 3, please insert the paragraph:

The present application claims priority to U.S. application 09/338,094 filed June 23, 1999, which claims benefit of U.S. application 60/093,080.

In the Claims

37. (New) A weatherseal for releasably contacting a panel, comprising:

(a) a substrate; and

(b) a contact layer on at least a portion of the substrate, the contact layer including a thermoset carrier and a multitude of UHMW polyethylene particles

having a polar functional group, the UHMW polyethylene particles chemically bonded to the thermoset carrier to form surface projections.

38. (New) The weatherseal of Claim 37, wherein the thermoset carrier includes cross-linked urethane.

39. (New) The weatherseal of Claim 37, wherein the substrate includes one of an EPDM, a thermoplastic and a thermoplastic elastomer.

40. (New) A weatherseal, comprising:

(a) a substrate including one of an EPDM, a thermoplastic and a thermoplastic elastomer; and

(b) a contact layer on the substrate, the contact layer including projection forming surface treated UHMW polyolefin particles in a cross linked urethane based carrier, the surface treated UHMW polyolefin particles.

41. (New) The weatherseal of Claim 40, wherein the UHMW polyolefin particles are cross-linked.

42. (New) A weatherseal contact layer having a multitude of projections, comprising a multitude of coefficient of friction reducing projection forming surface treated thermoplastic particles bonded to a cured thermoset carrier.

43. (New) The contact layer of Claim 42, wherein the thermoplastic particles are an ultra high molecular weight olefin.

44. (New) The contact layer of Claim 42, wherein the thermoplastic particles are surface treated UHMW polyethylene.

45. (New) The contact layer of Claim 42, wherein the thermoset carrier includes urethane.

46. (New) The contact layer of Claim 42, wherein the thermoplastic particles have a melting temperature greater than a curing temperature of the thermoset carrier.

47. (New) A weatherseal, comprising:

(a) a substrate; and

(b) a contact layer on a portion of the substrate, the contact layer having a multitude of surface treated olefinic particles in a cured thermoset urethane based carrier, the surface treated olefinic particles sized to create friction reducing surface projections in the contact layer.

48. (New) The weatherseal of Claim 47, wherein the substrate includes one of an EPDM, a thermoplastic and a thermoplastic elastomer.

49. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles are UHMW polyethylene.

50. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles are chemically bonded to the cured thermoset urethane based carrier.

51. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles are cross-linked.

52. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles are sufficiently bonded to the cured thermoset urethane based carrier to substantially preclude non-destructive separation.

53. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles are encapsulated within the cured thermoset urethane based carrier.

54. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles have a polar functional group.

55. (New) The weatherseal of Claim 47, wherein a melting temperature of the surface treated olefinic particles is greater than a curing temperature of the urethane based carrier.

56. (New) A method of forming a weatherseal, comprising:

(a) forming a substrate;

(b) mixing a multitude of surface treated olefinic particles and a curable thermoset urethane based carrier;

(c) disposing the mixed surface treated olefinic particles and the curable thermoset urethane based carrier on a portion of the substrate; and

(d) curing the curable thermoset urethane based carrier as it is disposed on the substrate to retain discrete surface treated olefinic particles and form surface projections.

57. (New) A weatherseal, comprising:

(a) a substrate; and

(b) a contact layer on a portion of the substrate, the contact layer having a multitude of surface treated olefinic particles in a cured thermoset urethane based carrier, the surface treated olefinic particles having a melting temperature greater than a curing temperature of the urethane based carrier.

58. (New) The weatherseal of Claim 57, wherein the substrate includes one of an EPDM, a thermoplastic and a thermoplastic elastomer.

59. (New) The weatherseal of Claim 57, wherein the surface treated olefinic particles are UHMW polyethylene.

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64. (New) The weatherseal of Claim 57, wherein the surface treated olefinic particles have a polar functional group.

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66. (New) The weatherseal of Claim 65, wherein the substrate includes one of an EPDM, a thermoplastic and a thermoplastic elastomer.

67. (New) The weatherseal of Claim 65, wherein the surface treated olefinic particles are UHMW polyethylene.

69. (New) The weatherseal of Claim 65, wherein the surface treated olefinic particles are chemically bonded to the cured thermoset carrier.

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72. (New) The weatherseal of Claim 65, wherein a plurality of the surface treated olefinic particles are encapsulated within the cured thermoset carrier.

73. (New) The weatherseal of Claim 65, wherein the surface treated olefinic particles have a polar functional group.

REMARKS

In the final Office Action of the parent application, in Paper 6, at Page 2, Paragraph 3, Examiner Paulraj relies upon the primary reference Chihara (U.S. Patent No. 5,115,007) to disclose weatherstrips for automobile glass run channels in which an EPDM substrate is coated with a low friction, abrasion resistant coating composition which is comprised of a thermosetting polymeric binder derived from a block urethane prepolymer solution which is compounded with silicone oil and a cross linking agent.

As stated in Chihara, the abrasion resistant and low friction characteristics are imparted by the thermosetting composition. (Col. 2, Lines 13-15) The micropowders relied upon by the examiner are an optional aspect of Chihara and are not employed to provide abrasion resistance or low friction. (Col. 2, Lines 27-29) Chihara expressly states "an important aspect of the present invention is the use of cross linking agents to obtain improved physical properties such as abrasion resistance." (Col. 4, Lines 62-64). Thus, Chihara discloses a specific thermoset material for providing abrasion resistance and low friction. The micropowders of Chihara are not necessary and do not provide the desired abrasion resistance and low friction functionality. (Abstract, Col. 2, lines 12-27, Col. 4, lines 62-64).

Chihara repeatedly discloses a flat, uniform surface of the resulting cured film. Chihara states "the appearance of the cured coating film is uniform and homogenous." (Col. 7, Lines 19-21)

In addition, "all the mixtures (resin I) of B, C, D, E and F dry to form a flat and uniform coating." (Col. 10, line 35-36.)

Further, as set forth in Column 6, Lines 61-66, the additives employ in part to "provide a flat, non-glossy appearance."

The micropowders of Chihara are used as fillers, to control viscosity and provide a flat, non-glossy appearance, proper hardness and toughness to the applied cured coating film. (Col. 6, Lines 61-66.)

The examiner asserts these statements do "not necessarily preclude any surface projections on the coating surface." (Paper 6, Page 5, Paragraph 6.)

A *prima facie* showing of obviousness cannot be made by relying upon a reference to preclude a possibility. Rather, the reference must teach the asserted combination. Specifically,

> to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. See *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See *B.F. Goodrich Co. v. Aircraft Breaking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996). *In re Kotzab*, 55 USPQ2d 1313, 1316-1317 (Fed. Cir. 2000)
>
> As mentioned previously, more than a mere scintilla of evidence is necessary to support the Board's implicit conclusion that "one system" is equal to "one sensor." Based on the entirety of Evans' disclosure, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support the conclusion that "one system" means "one sensor. *In re Kotzab*, at 1317.

Therefore, applicant respectfully submits the reliance upon Chihara is legally insufficient.

Issue - Formation of surface projections

With respect to Chihara, the examiner asserts "it is the examiner's position that if the micropowders are uniformly distributed in the composition in the maximum amount (60 parts by weight), at least some of the particles will be present on the coating surface and cause surface projections." (Paper 6, Page 4)

However, the examiner has not explained why such micropowders directed to providing a flat non-glossy appearance would be oriented to project from an adjacent portion of the resin, rather than i.e., coplanar with the adjacent portion of the thermosetting resin.

Applicant submits Chihara suggests the surface tension of the Chihara resin would preclude the micropowders from projecting through the surface tension, but rather minimize the energy and align parallel to the surface of the resin. That is, the micropowders in such a coating would tend to align with the surface tension force of the resin matrix, thereby minimizing the energy potential of the system and thus, avoid forming surface projections.

The examiner further states that the amount of micropowders employed in Chihara, if uniformly distributed that at least some of the particles would be present on the coating surface and cause surface projections. (Paper 6, Page 4, Paragraph 8)

However, this assertion is contrary to the repeated statements of Chihara, the primary reference, wherein micropowders are employed and the resulting surface of the film is flat, non-glossy (Col. 6, Lines 64-65), uniform and homogenous (Col. 7, Lines 19-20) and "flat and uniform. (Col. 10, Lines 35-36.) These terms teach away from surface projection particles in a contact layer. Again, it appears the surface tension force would dominate over the Chihara micropowders and the surface would be flat as set forth in Chihara.

Issue - thermoplastic grains in a thermoset resin

The examiner relies upon Kamei to disclose thermoplastic grains in a thermoplastic resin. (Paper 6, Page 3, Paragraph 5). The reliance upon Kamei does not cure the deficiencies of Chihara.

The examiner asserts the motivation for employing the thermoplastic grains of Kamei in the thermoset resin of Chihara is to improve the sliding property and wear resistance of the coating composition. (Paper 6, Page 3, Paragraph 5)

However, this asserted "obvious combination" is contrary to the express teaching of Chihara, which relies upon the *thermosetting resin* to provide the low friction and wear resistance, rather than any particles. The micropowders do not form surface projections and in fact are optional in Chihara. (Col. 2, lines 27-29) Chihara is directed to solving problems with napped or coated glass run channels. (Col. 1, lines 27-30) Chihara solves this problem by virtue of a thermosetting coating, which itself is abrasion resistant and low friction. (Col. 2, lines 12-14) It would be contrary to Chihara to employ an unnecessary material cost and manufacturing step required for inclusion of the asserted particles.

Further, no basis has been identified for interchanging the micropowders in a thermoset resin of Chihara with thermoplastic grains from a thermoplastic resin in Kamei. Conversely, nor is there any suggestion that the thermoplastic resin of Kamei can be replaced by the thermoset resin of Chihara, for particles.

With respect to the examiner's assertion that the interchangeability of thermoplastic particles in a thermoplastic resin matrix for thermoplastic in a thermoset resin matrix would be obvious, the examiner has provided no basis or suggestion in any of the references for such interchangeability.

The reliance upon the desire to form coating compositions is contrary to each of the references relied upon. That is, the flat thermoset structure of Chihara and the thermoplastic grain and the thermoplastic resin of Kato, Ohdaira and Kamei, wherein Kato and Ohdaria actually melt the particles, do not suggest the present claims.

Issue - Affinity of treated particles with respect to thermoset resin versus thermoplastic resin

Examiner Paulraj then relies upon Ohdaira to disclose UHMW particles which are surface treated to provide better affinity in a *thermoplastic* resin matrix in which they are embedded. Thus, the examiner asserts it would have been obvious to treat the surface of the UHMW particles by introducing polar functional groups. The motivation being to improve the affinity of the particles to the *thermoset* polyurethane matrix. (Paper 5, page 3, paragraph 6).

However, this reliance upon Ohdaira is contrary to the express teaching of Ohdaira. That is, Ohdaira completely melts the particles in a *thermoplastic* resin and is thus, more closely aligned with Kamei. Specifically Ohdaira states "the melt blending of the components (A) [the thermoplastic resin] and (B) [ultra high molecular weight polyolefin powder] can be carried out at a temperature, for example, higher than the melting points of the components (A) and (B)." (Col. 8, lines 3-5.) Thus, Ohdaira teaches the full melting of all particles in the film. Therefore, it would be contrary to the express teaching of Ohdaira to form surface particles as set forth in the present claims.

The examiner asserts Ohdaira suggests the surface treatment to provide better affinity of the particles to a thermo*set* polyurethane matrix. However, this is also contrary to Ohdaira, which employs a thermo*plastic* matrix.

This is insufficient disclosure and suggestion to sustain a *prima facie* showing of obviousness. No showing has been made as to a suggestion or motivation for substituting a thermoset resin for a thermoplastic resin. An asserted suggestion of improving the characteristics of a device is insufficient. There must be a suggestion as to the interchangeability of a thermoset resin for a thermoset resin with respect to thermoplastic particles.

Examiner Paulraj further states in Paper 6, Page 4, Paragraph 7, that it would have been obvious to insure the UHMW particles do not melt during production of the coating composition by employing a melting temperature above the curing temperature of the thermoset polyurethane matrix.

In addition to the previously set forth distinctions, this is contrary to Ohdaira. Specifically, Ohdaira melts the particles. (Col. 8, line 3-5.)

The examiner's assertion that Ohdaira solves the problem of dispensability by introducing polar functional groups to the surface of UHMW polyolefin would have suggested use in a thermoplastic resin in place of a thermoset material as liquid prior to curing, is inconsistent with the references.

Specifically, Ohdaira entirely melts the thermoplastic particles in a thermoplastic resin. Thus, as the examiner states, if one skilled in the art would have been motivated to look at the teachings of Ohdaira, the particles would be melted.

Examiner Paulraj states "it is the examiner's position that since the polyolefin powders would be introduced into the polyurethane resin matrix disclosed by Chihara, et al. prior to the curing reaction (prior to becoming thermoset), one of ordinary skill in the art would have encountered the same problems of dispensability associated with the use of a thermoplastic resin matrix." [Paper 6, Page 6]

However, the weatherseal is not used prior to curing, nor is there an issue of particles leaping from a resin matrix prior to curing. That is, the weatherseal as intended for use and as claimed includes a cured thermoset resin. Thus, one of ordinary skill in the art would not encounter the same problems of dispensability associated with the use of a thermoplastic resin matrix. None of the references disclose or suggest the interchangeability of a thermoplastic resin matrix and a thermosetting resin matrix.

The examiner states the advantages imparted by the UHMW particles (low sliding resistance and superior wear resistance) can also occur in a thermosetting carrier resin." (Paper 6, page 6) The examiner has not identified any suggestion in either reference to support this assertion. In fact, applicant submits the references taken as a whole teach away from the asserted combination of the examiner.

The examiner states one skilled in the art would have been motivated to use such particles (with Kamei) and the coating composition disclosed by Chihara. (Paper 6, Page 6) However, this assertion is contrary to both references. Specifically, Chihara is directed to a thermoset resin to provide low friction and wear resistance so as to provide a flat, non-glossy appearance. (Col. 6, Lines 63-65) In contrast, Kamei has the purpose to obtain a surface appearance almost identical to an embossing process. (Col. 2, Line 65) The Kamei surface of the thin film is between adjacent powder grains being made uneven, whereby a surface appearance almost identical to a uniform embossing is able to be obtained. (Col. 2, Lines 13-21)

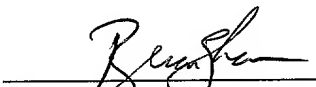
Thus, the examiner is asserting it would be obvious to modify the primary reference directed to a cured thermoset resin having a flat glossy uniform finish with a thermoset resin with surface altering thermoplastic particles in a thermoplastic resin of Kamei) to provide an embossed appearance. Applicant respectfully submits this cannot sustain a prima facie showing of obviousness.

Applicant respectfully submits the reliance upon Kato, U.S. Patent No. 5,447,671 (the '671 patent) fails to cure the deficiencies of the primary or alternative secondary references. Specifically, the '671 patent discloses the use of thermoplastic particles in a thermoplastic carrier, that is, the same construction as the Kamei patent. Specifically, the '671 patent states "the contacting layer is formed of mixing two synthetic resins of different melting points [that is, each of the resins is thermoplastic] and *melting* the lower melting point particles and avoiding fully melting the higher melting point particles. The resulting Kato weatherseal has only thermoplastic particles in a thermoplastic resin.

Thus, Kato also teaches away from the proposed use of thermoplastic particles in a thermoset resin matrix.

Therefore, applicant respectfully submits all the pending claims, Claims 37-73 are in condition for allowance, and such action is earnestly solicited. If, however, the examiner believes that any issues remain, the examiner is cordially invited to call the undersigned so that such matters can be promptly resolved.

Respectfully submitted,



Brian B. Shaw, Registration No. 33,782
HARTER, SECREST & EMERY LLP
1600 Bausch & Lomb Place
Rochester, New York 14604

Date: January 30, 2002

VERSION WITH MARKINGS SHOWING CHANGES MADE

In the Specification

On page 1, prior to line 3, please insert the following --The present application claims priority to U.S. application 09/338,094 filed June 23, 1999, which claims benefit of U.S. application 60/093,080.--

In the Claims

Please cancel Claims 1 through 36.

Please add the following new claims:

37. (New) A weatherseal for releasably contacting a panel, comprising:

(a) a substrate; and

(b) a contact layer on at least a portion of the substrate, the contact layer including a thermoset carrier and a multitude of UHMW polyethylene particles having a polar functional group, the UHMW polyethylene particles chemically bonded to the thermoset carrier to form surface projections.

38. (New) The weatherseal of Claim 37, wherein the thermoset carrier includes cross-linked urethane.

39. (New) The weatherseal of Claim 37, wherein the substrate includes one of an EPDM, a thermoplastic and a thermoplastic elastomer.

40. (New) A weatherseal, comprising:

(a) a substrate including one of an EPDM, a thermoplastic and a thermoplastic elastomer; and

(b) a contact layer on the substrate, the contact layer including projection forming surface treated UHMW polyolefin particles in a cross linked urethane based carrier, the surface treated UHMW polyolefin particles.

41. (New) The weatherseal of Claim 40, wherein the UHMW polyolefin particles are cross-linked.

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43. (New) The contact layer of Claim 42, wherein the thermoplastic particles are an ultra high molecular weight olefin.

44. (New) The contact layer of Claim 42, wherein the thermoplastic particles are surface treated UHMW polyethylene.

45. (New) The contact layer of Claim 42, wherein the thermoset carrier includes urethane.

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(a) a substrate; and

(b) a contact layer on a portion of the substrate, the contact layer having a multitude of surface treated olefinic particles in a cured thermoset urethane based

carrier, the surface treated olefinic particles sized to create friction reducing surface projections in the contact layer.

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54. (New) The weatherseal of Claim 47, wherein the surface treated olefinic particles have a polar functional group.

55. (New) The weatherseal of Claim 47, wherein a melting temperature of the surface treated olefinic particles is greater than a curing temperature of the urethane based carrier.

56. (New) A method of forming a weatherseal, comprising:

(a) forming a substrate;

(b) mixing a multitude of surface treated olefinic particles and a curable thermoset urethane based carrier;

(c) disposing the mixed surface treated olefinic particles and the curable thermoset urethane based carrier on a portion of the substrate; and

(d) curing the curable thermoset urethane based carrier as it is disposed on the substrate to retain discrete surface treated olefinic particles and form surface projections.

57. (New) A weatherseal, comprising:

(a) a substrate; and

(b) a contact layer on a portion of the substrate, the contact layer having a multitude of surface treated olefinic particles in a cured thermoset urethane based carrier, the surface treated olefinic particles having a melting temperature greater than a curing temperature of the urethane based carrier.

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